The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board

Paper No. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YOSHIHARU UEYAMA, MICHIYUKI TAKAGI,
YASUSHI TAKANO, YUKIJI IWASE, MICHIAKI IDA, SADASHI TANAKA,
YOSHIHIRO NAGAOKA, and TETSUYA YOSHIDA

Appeal No. 1999-0033
Application No. 08/514,255

HEARD: March 3, 2000

Before MCCANDLISH, Senior Administrative Patent Judges, STAAB and GONZALES, Administrative Patent Judges.

MCCANDLISH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1, 5, 8, 9, 12 and 21. Subsequent to the final rejection, appellants canceled claim 21, thus leaving for our review the final rejection of claims 1, 5, 8, 9 and 12. The only other claims still pending in the application either have been allowed or have been withdrawn from consideration as being directed to a non-elected invention.

In the summary of the invention on page 2 of the brief, appellants describe their invention as follows:

> The present invention relates to a fluid transferring or compressing machine, such as a turbo-pump, a turbo-compressor or the like in which a vibration generated at a front end of a diffuser vane, which receives a fluid urged by a rotating impeller, is prevented or restrained from being transmitted to an outer casing which contacts the atmosphere.

According to one embodiment of appellants' invention (see Figure 2), an elastic member 44 is disposed between the vane member 4 and an inner casing 3. The elastic member 44 is understood to be deformable by the vibrations to reduce what appellants call the "connecting rigidity"[1] between the vane member and the casing.

All of the appealed claims are independent claims, which vary in scope as discussed below.

Appealed claim 1 recites that "at least one of the vane member and the casing has an elastically deformable portion connected to another [sic] one of the vane member and the casing to obtain a decreased connecting rigidity between the vane member and the casing in at least one of an impeller radial direction and an impeller circumferential direction."[2] Appellants acknowledge that the claimed elastically deformable portion is readable on the elastic member 44 (see appellants' answer filed June 30, 2000 (Paper No. 28) in response to Interrogatory No. 5 in our Order mailed May 31, 2000 (Paper No. 27)). The capability of the elastic member 44 to deform in a radial direction reduces the connecting rigidity in that direction (see appellants' answer in Paper No. 28 in response to our Interrogatory No. 1 in our Order mentioned above). Similarly, the

[1] The "connecting rigidity" is defined on page 3 of the specification as being the "vibration transfer function."
[2] Our interpretation of this claim language is set forth infra.

capability of the elastic member 44 to deform in a circumferential direction reduces the connecting rigidity in that direction (see appellants' answer in Paper No. 28 to our Interrogatory No. 2 in our Order mentioned above).

Appealed claim 5 recites that "at least one of the vane member and the casing has an elastically deformable portion connected to another [sic] one of the vane member and the casing to obtain a decreased connecting rigidity between the vane member and the casing in at least one of an impeller axial direction, an impeller radial direction and an impeller circumferential direction, . . . " This claim additionally recites that the "vane member is movable to a predetermined extent relative to the casing in an impeller axial direction . . . "

Appealed claim 9 specifically calls for an "elastic member . . . arranged between the vane member and the casing . . ." This claim recites that the elastic member is "substantially deformable in at least one of an impeller radial direction and an impeller circumferential direction so that the deformation of the vane member in the impeller radial direction is substantially unrestrained by the elastic member."

In contrast to claims 1, 5 and 9, appealed claim 8 is not limited to an elastically deformable portion or to an elastic member. Instead, claim 8 recites that "at least a portion of the vane member is discrete from the casing" and that "a deformation of the vane member in an impeller radial direction is unrestrained by the casing."

Appealed claim 12 also is not limited to an elastically deformable portion or to an elastic member. Furthermore, claim 12 differs from claims 1, 5, 8 and 9 by reciting, inter alia, that the casing structure has an inner casing and an outer casing. This claim

additionally recites that "a deformation of the vane member in an impeller radial direction is substantially unrestrained by the inner casing."

A copy of the appealed claims is appended to appellants' brief.

The following references are relied upon by the examiner as evidence of anticipation in support of his rejections under 35 U.S.C. §§ 102(b), 102(e):

Ryall et al. (Ryall)	3,801,217	Apr. 2, 1974
O'Sullivan et al. (O'Sullivan)	5,456,577	Oct. 10, 1995
German (German Patent)	964,020	May 16, 1957[3]

Claims 1, 5, 8, 9 and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ryall, claim 1 additionally stands rejected under 35 U.S.C. § 102(e) as being anticipated by O'Sullivan, and claim 8 additionally stands rejected under 35 U.S.C. § 102(b) as being anticipated by the German reference.

Before considering the merits of the rejections, it is necessary to address two matters: (1) the grouping of the appealed claims under 37 CFR § 1.192(c)(7) as amended effective April 21, 1995 and (2) an interpretation of certain language in claims 1 and 5.

With regard to the grouping of claims, 37 CFR § 1.192(c)(7) applies only to the rejection of claims 1, 5, 8, 9 and 12 based on the Ryall patent because this is the only rejection currently involving two or more claims. Appellants have not disputed the examiner's position on page 3 of the answer that the brief does not contain a statement that the appealed claims do not stand or fall together.

[3] An English translation of this German reference is attached to this decision.

Thus, with regard the rejection of the appealed claims based on Ryall, we are authorized under 37 CFR § 1.192(c)(7) to select any one of the claims on appeal as a representative claim and to affirm the examiner's rejection of all of the claims based on Ryall if the selected claim alone is unpatentable. Appellants' statement on page 9 of the brief that the appealed claims "stand together" does not meet the requirements necessary for separately considering the patentability of each claim rejected on Ryall. In accordance with 37 CFR § 1.192(c)(7), we therefore select claim 5 as the representative claim for the rejection involving the Ryall patent.

With regard to the issues arising from the language in claim 5, our attention focuses on the phrase "at least one of the vane member and the casing has an elastically deformable portion . . ." Being prefaced by the recitation "at least one of," this phrase contemplates three alternative limitations: (1) the recitation that the vane member has the elastically deformable portion, (2) the recitation that the casing has the elastically deformable portion and (3) the recitation that the combination of the vane member and the casing has the elastically deformable portion. For the purpose of reviewing the rejection of claim 5, we will select the first alternative, namely the vane member. Thus, claim 1 is readable as reciting that the vane member has the elastically deformable portion.

With further regard to claim 5, the next phase "connected to another one of the vane member and the casing . . ." appears to contemplate two alternative elements, namely (1) "the vane member" and (2) "the casing." For reviewing the rejection of

claim 5, we will select the second element, namely "the casing," so that the clause commencing with "at least one of . . ." may be interpreted as reciting that the vane member has an elastically deformable portion connected to the casing.[4]

Still referring to claim 5, the ensuing phase "to obtain a decreased connecting rigidity between the vane member and the casing in at least one of an impeller axial direction, an impeller radial direction and an impeller circumferential direction, . . ." contemplates several alternative limitations: (1) the impeller axial direction, (2) the impeller radial direction, (3) the impeller circumferential direction and (4) any combination of two or more of the aforesaid directions. For reviewing the art rejection of claim 5 we will select the first alternative, namely the impeller axial direction, so that the entire clause commencing with "at least one of the vane member . . ." and ending with "at least one of an impeller axial direction, an impeller radial direction and an impeller circumferential direction" may be interpreted as reciting that the vane member has an elastically deformable portion connected to the casing to obtain a decreased connecting rigidity between the vane member and the casing in at least the impeller axial direction.

Turning now to the § 102(b) rejection of claim 5, it is well settled that a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently, in order to anticipate a claim. In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). Anticipation of a claim merely requires a finding that the claim at issue "reads on" a prior art reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 781, 227 USPQ 773, 778 (Fed. Cir. 1985).

[4] Other alternative limitations are considered to be indefinite as discussed infra in our new ground of rejection under 35 U.S.C. § 112, second paragraph. However, since the selected alternative limitation is understandable, we can proceed with our review of the art rejections.

In the case at bar, the Ryall patent discloses an impeller, a vane, a vane member, and a casing, all as defined in claim 5. With regard to these claim elements, appellants do not take issue with the examiner's corresponding findings as set forth on page 5 of the final office action (mailed July 1, 1997) and pages 4 and 5 of the examiner's answer.

Appellants also do not appear to dispute the fact that Ryall discloses a compressible resilient member 180 (see Figure 4 of the Ryall drawings) confined between the diffuser vane structure 44 and what is described in Ryall's specification as an "end cover 42." (see column 5, lines 30-36, of the Ryall specification). Being resilient, Ryall's member 180 is elastically deformable and is even described in Ryall's specification as being deformable to exert a bias against the assembly of diffuser vane stages in the casing (see column 5, lines 37-42). Since Ryall's resilient member 180 engages the diffuser vane stage 44, it can be said that the diffuser vane "has" an elastically deformable portion in the same sense that appellants' vane member is said to have an elastically deformable portion. Appellants have not argued otherwise.

At the oral hearing, appellants' counsel was understood to argue that Ryall's cover member 42 is not part of the casing so that the resilient member 180 does not lie between the vane structure and the casing as required in claim 5. This argument was not presented in appellants' brief. More importantly, it is at odds with appellants' acknowledgment on page 9 of the brief that Ryall's element 42 is a "casing." The prior art (see column 2, line 29 of the cited O'Sullivan patent) even refers to this element as an "end casing."

According to its applicable, common ordinary meaning in Webster's Third New International Dictionary (G. & C. Merriam Company, 1971) the word "casing" is simply

"something that encases." Thus, Ryall's elements 26 and 42 form part of a casing that "encases" the impeller and the diffuser vane stages.

Ryall's resilient member 180 is therefore confined between a diffuser vane structure and a part of the casing to read on the recitation in claim 5 that the vane member has an elastically deformable portion connected to the casing. Being deformable and being axially confined between the vane structure 44 and the end casing member 42, Ryall's resilient member 180 will inherently reduce the connecting rigidity between the vane structure and the casing member in at least the impeller axial direction as recited in claim 5.

With regard to the last limitation in claim 5 (which recites that the vane member is movable to a predetermined extent relative to the casing in an impeller axial direction), Ryall's resilient member 180 is expressly described as being compressible (see column 5, lines 37-42), thus permitting the vane structure to be movable in an impeller axial direction. Furthermore, Figure 4 of Ryall's drawings shows that there are clearance spaces between vane structure 44 and the casing member 42 to permit movement of the vane structure in an impeller axial direction. In fact, a printed caption in Figure 4 refers to the clearances in question and states that they allows for "axial float of the cartridge," the "cartridge" obviously being the assembly of vane stages.

Thus, Ryall meets the last limitation, which recites that the vane member is movable in an impeller axial direction. Appellants have not argued otherwise.

Contrary to appellants' arguments on page 9 of the brief, neither claim 5 nor any of the other appealed claims "specifies decreased mobility" or even "vibration isolation" between the vane member and the casing. Furthermore, unlike claim 1, the limitation

concerning the connecting rigidity in claim 5 is met where, as here, Ryall's resilient member 180 inherently decreases the connecting rigidity in an impeller axial direction. Contrary to appellants' arguments Ryall's resilient member 180 will also reduce the connecting rigidity in an impeller radial direction and an impeller circumferential direction because the resilient member is deformable in radial and circumferential directions due to its engagement with the vane structure and the casing member. In any case, as far as claim 5 is concerned, it is sufficient that Ryall's resilient member 180 decreases the connecting rigidity in an impeller axial direction to meet the terms of the claim.

Finally, appellants argue on page 10 of the brief that Ryall does not "teach the concept of unrestrained deformation of the vane member in relation to the casing." This contention is unpersuasive even if it is assumed for the sake of argument that it is correct, because claim 5 is not limited to such "unrestrained deformation of the vane member." In this regard, it is well established patent law that features not claimed may not be relied upon to support patentability. See In re Self, 671 F.2d 1344, 1350-1351, 213 USPQ 1, 5 (CCPA 1982) and In re Richards, 187 F.2d 643, 645, 89 USPQ 64, 66 (CCPA 1951).

In view of the foregoing we are satisfied that Ryall anticipates the subject matter of claim 5, since each of the limitations of claim 5 is either expressly or inherently described in the Ryall patent. Accordingly, we will sustain the § 102(b) rejection of claim 5 based the Ryall patent. We also will sustain the standing § 102(b) rejection of claims 1, 8, 9 and 12 based on Ryall , since, as noted supra, these claims stand or fall with claim 5.

For reasons discussed supra, Ryall's resilient member 180 will decrease the connecting rigidity in an impeller radial direction and even in an impeller circumferential direction, as well as in an impeller axial directrion. Accordingly, claim 1 is also anticipated by Ryall. For this additional reason, the § 102(b) rejection of claim 1 based on Ryall is sustainable.

Claims 8, 9 and 12 are also anticipated by Ryall. For this additional reason, the § 102(b) rejection of claims 8, 9 and 12 based on Ryall is sustainable. In this regard, we note that the unrestrained radial deformation recited in claims 8, 9 and 12 is not limited to any particular form or type of deformation. Instead, these claims are broad enough to cover any form of radial deformation of the vane member, such as thermal deformation or "thermal distortion" as appellants call it on page 10 of the brief.[5] Thermal deformation may take the form of thermal contraction or thermal expansion. Clearly, thermal contraction of Ryall's vane structure 16, 18 in a radial direction is unrestrained by the outer casing (claim 8) or the inner casing 12 (claim 12). Furthermore, thermal expansion of Ryall's vane structure 44 in a radial direction is unrestrained by the outer casing and is also unrestrained by the resilient member 180.

We cannot sustain the § 102(b) rejection of claim 8 based on the German reference. Claim 8, as noted supra, recites that deformation of the vane member in an impeller radial direction is unrestrained by the casing which surrounds the vane member. According to the examiner's findings (see page 7 of the answer), the German reference discloses a centrifugal pump in which the vane member 3, 4 is attached to a part 5 of the

[5] The word "distortion" is a synonym for the word "deformation." See Webster's Third New International Dictionary cited supra.

casing. Such attachment will inherently result in some restraint in a radial direction. Accordingly we cannot agree that the German reference anticipates claim 8.

We also cannot sustain the § 102(e) rejection of claim 1 based on the O'Sullivan patent. In order to anticipated this claim, it must be established that O'Sullivan's disk spring 56, which reacts against an end casing member 4 to axially bias the channel ring members of the pump, is deformable to reduce the connecting rigidity in a radial direction and/or a circumferential direction. The examiner has offered no adequate explanation or evidence to support his finding (see page 7 of the answer) that O'Sullivan's disk spring 56 will reduce the connecting rigidity between the vane structure 50 and the end casing 4 in the radial or circumferential direction. Although O'Sullivan's disk spring 56 is deformable in an axial direction, it does not necessarily follow that it is also deformable in the radial or circumferential direction to reduce the connecting rigidity in the radial or circumferential direction to meet the terms of claim 1.

Under the provisions of 37 CFR § 1.196(b), the following new ground of rejection is entered against claims 1, 5, 9 and 12:

Claims 1, 5, 9 and 12 are rejected under the second paragraph of 35 U.S.C. § 112 as being indefinite and hence failing to particularly point out and distinctly claim the subject matter which appellants regard as their invention.

With regard to our new rejection under the second paragraph of § 112, it is established patent law that the claims must define the metes and bounds of the invention with a reasonable degree of precision. In re Venezia, 530 F.2d 956, 958, 189 USPQ 149, 151 (CCPA 1976). Moreover, the question of compliance with the second paragraph of § 112 requires a determination of whether those skilled in the art would understand what

is claimed when the claim is read in light of the specification. See Orthokinetics Inc. v. Safety Travel Chairs Inc., 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986) and cases cited therein.

In the case at bar, our first difficulty with the claim language centers on the recitation in claims 1 and 5 that "at least one of the vane member and the casing has an elastically deformable portion . . ." As noted supra, this limitation contemplates the combination of the vane member and the casing because it is prefaced by the phase "at least one of." It is not understandable how the combination of the vane member and the casing can be said to have an elastically deformable portion connected to one of the elements in the combination itself, namely the aforesaid casing or, alternatively, the aforesaid vane member.

Our next difficulty with the claim language in claims 1 and 5 centers on the recitation that the elastically deformable portion is connected to "another one of the vane member" (emphasis added). When read literally, this claim language is ungrammatical and, hence, not understandable. The recitation of "another one of . . ." contemplates vane members in the plural, not in the singular, but claims 1 and 5 refer to only one vane member.

Our difficulty with the language in claims 9 and 12 centers on the word "substantially." In claim 9, the deformation of the "vane members [sic] in at least one of an impeller axial direction and an impeller radial direction" is recited to be "substantially unrestrained by the casing," the elastic member is recited to be "substantially deformable in at least one of an impeller radial direction and an impeller circumferential direction" and the deformation of the vane member in an impeller radial direction is recited to be

"substantially unrestrained by the elastic member." In claim 12, the deformation of the vane member in an impeller radial direction is recited to be "substantially unrestrained by the inner casing." Each occurrence of the term "substantially" renders the claimed subject matter indefinite. Furthermore, the recitation of "vane members" in claim 9 lacks antecedent basis.

When a word of degree such as "substantially" is used in a claim, it must be determined whether the underlying specification provides some standard or guideline for measuring that degree, such that a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. Seattle Box Co. v. Industrial Crating & Packing Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

In the present case, we find no standards or guidelines in appellants' specification for measuring the scope of the word "substantially" in each of the occurrences quoted supra. In fact, in response to Interrogatory No. 7 in our Order mentioned above, appellants have not pointed to any standards or guidelines in the specification for determining the scope of the term "substantially" as used in claims 9 and 12. Instead, in response to our Order, appellants are content with arguing that the claim language in question is definite. Those arguments are unpersuasive.

The "concurring/dissenting" opinion in Zodiac Pool Care Inc. v. Hoffinger Industries Inc., 206 F.3d 1408, 1418, 54 USPQ2d 1141, 1149 (Fed. Cir. 2000) does not overrule the requirement for standards or guidelines as set forth in Seattle Box. Furthermore, the asserted definitions for the word "substantially" are terms of degree that are just as indefinite as the word "substantially" itself. The need to cover what might be

considered as being insignificant variations of an invention does not amount to a license to resort to the unbridled use of words of degree without appropriate constraints to guard against the potential use of such words as the proverbial nose of wax. See Ex parte Oetiker, 23 USPQ2d 1651, 1657 (BPAI 1991), aff'd mem., 951 F.2d 1267, 23 USPQ2d 1661 (Fed. Cir. 1991).

In summary, the examiner's decision to reject appealed claims 1, 5, 8, 9 and 12 under 35 U.S.C. § 102(b) as being anticipated by Ryall is affirmed, the examiner's decision to reject appealed claim 1 under 35 U.S.C. § 102(e) as being anticipated by O'Sullivan is reversed, the examiner's decision to reject appealed claim 8 under 35 U.S.C. § 102(b) as being anticipated by the German reference is reversed, and a new ground of rejection of claims 1, 5, 9 and 12 has been entered under 37 CFR § 1.196(b).

In addition to affirming the examiner's rejection of one or more claims, this decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides, "[a] new ground of rejection shall not be considered final for purposes of judicial review."

> Regarding any affirmed rejection, 37 CFR § 1.197(b) provides:
> (b) Appellant may file a single request for rehearing within two months from the date of the original decision . . . .

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner . . . .
>
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record . . . .

Should the appellants elect to prosecute further before the Primary Examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellants elect prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for reconsideration thereof.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED/ 37 CFR § 1.196(b)

HARRISON E. MCCANDLISH Senior Administrative Patent Judge	)	
LAWRENCE J. STAAB Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN F. GONZALES Administrative Patent Judge	)	

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